

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) An apparatus based on a telecentric imaging system for forming an image of a linear zone (17) of an object (1), the apparatus comprising:
 - a non-telecentric camera (9) comprising an objective (8) and an image plane (19) formed of a row (15) of photosensitive cells;
 - telecentric imaging means placed between the objective and the object, said telecentric imaging means (18) comprising a concave strip mirror (6), which is said concave strip mirror substantially aligned with said row of cells, and with the aperture of said objective being located in its the focal plane of the concave strip mirror, the concave strip mirror and the objective jointly forming a telecentric image of the object on the row of photosensitive cells; and
 - a light source (7) producing radiation (3) directed to the object,

~~characterised in that in the apparatus wherein said concave strip mirror is one a planar parabolic mirror (6); and~~

~~that the telecentric imaging means (18) also comprise, a strip-like fully reflective plane mirror disposed between said parabolic mirror and the objective, a strip-like plane mirror (5), through which the directed radiation (4) reflected from the object (1) and the parabolic mirror strikes the objective (8) and then the image plane (19) in order to obtain a sharp image of the width parts of the object for measurement of at least one dimension (D1 and/or D2 and/or D3 ... Dn) of these.~~
2. (Currently Amended) ~~An~~ The apparatus as defined in claim 1, ~~characterised in that wherein said strip-like parabolic mirror (6) is a planar parabolic mirror; that the lengths (L2 and L1) of said strip-like planar parabolic mirror and strip-like plane mirror (5) are mutually aligned and aligned with the row (15) of photosensitive cells forming the image plane; and that the reflective surfaces (25 and 26, respectively) of the strip-like plane mirror (5) and said~~

strip-like planar parabolic mirror (6) are directed towards each other such that the width (~~W1 and W2~~) of each is reflected from the reflective surface of both at a predetermined angle (~~K1, K2~~).

3. (Currently Amended) ~~An~~ The apparatus as defined in claim 2, ~~characterised in that~~ wherein the distance (~~S1~~) of the strip-like plane mirror (5) from the objective is at least 1.5 times the distance (~~S2~~) of the planar parabolic mirror (~~6~~) from the objective; and that the plane mirror (~~5~~) and the planar parabolic mirror (~~6~~) are mutually spaced by a distance (~~P1~~) perpendicular to their length, the distance being at least equal to half of the combined width (~~W1+W2~~) of these mirrors and at the most five times the combined width (~~W1+W2~~) of these mirrors.

4. (Currently Amended) ~~An~~ The apparatus as defined in claim 2, ~~characterised in that~~ wherein the normal (~~N2~~) to the reflective surface (~~26~~) of the strip-like planar parabolic mirror is at a maximum 30° ~~C~~ angle (~~K3~~) relative to the normal (~~N1~~) to the object, and that the angle (~~K4~~) between the normals (~~N2 and N3~~) to the reflective surfaces (~~26 and 25~~) of the planar parabolic mirror and the plane mirror is 30° at the most.

5. (Currently Amended) ~~An~~ The apparatus as defined in claim 1, ~~characterised in that~~ wherein the length (~~L2~~) of the strip-like ~~parabolic mirror or the~~ planar parabolic mirror, ~~respectively,~~ is substantially greater than its width (~~W2~~); and that at least the length (~~L2~~) of the ~~parabolic mirror or the~~ planar parabolic mirror, ~~respectively,~~ is greater than the width (~~L3~~) of the object to be observed.

6. (Currently Amended) ~~An~~ The apparatus as defined in claim 2, ~~characterised in that~~ wherein the reflective surface (~~26, 25~~) of the ~~strip-like parabolic mirror or the~~ planar parabolic mirror (~~6~~), ~~respectively,~~ and ~~of the~~ strip-like plane mirror, is a metal surface which is open at the reflection side.

7. (Currently Amended) ~~An~~ The apparatus as defined in claim 1, ~~characterised in that~~ wherein the light source ~~(7)~~ is a scattered light source which is independent of the telecentric imaging means and is located adjacent to the telecentric imaging means ~~(18)~~ at a distance ~~(P2)~~ transverse to the direction of movement of the radiation ~~(4)~~ passing through them, whereby said imaging means ~~(18)~~ receive scattered light reflected from the object ~~(1)~~.

8. (Currently Amended) ~~An~~ The apparatus as defined in claim ~~57~~, ~~characterised in that~~ wherein said transverse distance ~~(P2)~~ of the scattered light source is substantially smaller than the distance ~~(H)~~ between ~~the parabolic mirror or~~ the planar parabolic mirror, ~~respectively~~, and the object; and that said scattered light source comprises one or more lamps ~~(7; 7a, 7b)~~ having a substantial area ~~(A)~~, the more than one lamps ~~(7a and 7b)~~ being mutually spaced principally over the width ~~(L3)~~ of the object by distances ~~(P3)~~ parallel with the length ~~(L2)~~ of ~~the parabolic mirror or~~ the planar parabolic mirror, ~~respectively~~, in order to provide a substantially homogenous scattered light ~~(3)~~ at the object ~~(1)~~.

9. (Currently Amended) A method for forming a telecentric image of an opaque object ~~(1)~~ located on an opaque and non-reflective substrate ~~(20)~~ with a telecentric system, ~~in which the~~ method comprising the steps of:

~~the directing~~ scattered light ~~(3)~~ ~~is allowed to be directed~~ to the object ~~(1)~~ over its entire width ~~(L3)~~ to be inspected;

~~collecting~~ radiation ~~(24)~~ reflected from the object ~~is collected~~ with a concave strip mirror ~~(6)~~ ~~and is allowed~~ allowing the radiation to be rereflected from the concave mirror as a bundle ~~(4)~~ of rays;

~~providing a camera~~ in said reflective bundle of rays, ~~a camera (9) is provided by the~~ wherein an objective (8) and the a row (15) of photosensitive cells with the objective aperture are located substantially in the focal plane of the concave strip mirror, the concave strip mirror and the objective forming jointly a telecentric image of a linear strip ~~(17)~~ of the object on the row of photosensitive cells;

~~characterised in that the method additionally comprises:~~

~~allowing the object (1) to move (F) in a direction substantially perpendicular to said linear strip (17),~~
~~collecting scattered light (24) reflected from the object with one a concave parabolic mirror or planar parabolic mirror (6) and allowing it to be rereflected, first to the a fully reflective plane mirror (5) and from there to said camera (9) as an undistorted telecentric image; and~~
~~measuring, by means of the photosensitive diodes on the image plane (19), the values of at least one or more dimensions (D1 and/or D2 and/or D3...Dn) of the object which are at least partly parallel with said linear strip (17) and the row (15) of photosensitive cells.~~

10. (Currently Amended) ~~A~~ The method as defined in claim 9, ~~characterised in that wherein~~ the object (1) consists of a log of timber, a metal sheet or any similar elongated body not having straight edges which is moved by a chassis base (20) and which is worked into one or more strips (21a, 21b, 21c...) having a width less than the original width; and that by measuring the undistorted telecentric image as described the dimensions (D1 and/or D2 and/or D3...Dn) of said strips are controlled.

11. (Currently Amended) ~~An~~ The apparatus as defined in claim 3, ~~characterized in that wherein~~ the normal (N2) to the reflective surface (26) of the strip-like planar parabolic mirror is at a maximum 30° angle (K3) relative to the normal (N1) to the object, and that the angle (K4) between the normals (N2 and N3) to the reflective surfaces (26 and 25) of the planar parabolic mirror and the plane mirror is 30° at the most.